

WGISS Demo Storyline v8.1020.159_ESA

Regular text: speaker is talking

Italics comments on what the video should be showing

1. *Video of Borneo island –*
2. *whole island*
3. *pictures of forested and deforested areas of Borneo*

- The Borneo rainforest ecoregion is rich with biodiversity and acts as an important carbon sink for reducing carbon dioxide in the atmosphere.
- These once-dense rainforests have significantly depleted since the 1960s, due to wide-scale deforestation and rapid industrialization.
- The synthetic aperture radar data from JAXA's ALOS Palsar instrument reveal both the forested and deforested areas in Borneo.

A net loss of forest canopy has not only adverse impacts on biosequestration of atmospheric carbon dioxide, but also has ecological consequences such as habitat loss and changes to local species richness and biodiversity.

1. *Video of FedEO client doing collection search (IDN keywords for search criteria: "modis, land surface, reflectance") and showing one DIF for any of the MODIS data collections in the list. (Note : MOD15A25 selected)*
 - A European scientist uses the European Space Agency's (ESA) FedEO search tool to search A scientist searches for Moderate Resolution Imaging Spectroradiometer or NASA MODIS Surface Reflectance data. Next, data set collection information is viewed before proceeding with a more detailed granule search for leaf area index data. Leaf area index can provide a better measurement for plant density and growth than NDVI alone because it assigns a quantifiable value to the amount of vegetation on the ground. These data provide vital information about the thickness and extent of forest canopy.

1. *Video of FedEO client doing granule search for MODIS land cover data granules. Show MODIS data – show data search, browse, and button for data download.*

- A European scientist uses the European Space Agency's (ESA) FedEO search tool to search for NASA Moderate Resolution Imaging Spectroradiometer (MODIS) data over the island of Borneo.

- The MODIS instruments onboard both the NASA Terra and Aqua satellites observe the entire Earth's surface every 1 to 2 days, providing repeat coverage that increases the probability of more cloud-free scenes. However, most forest clearing occurs at sub-MODIS pixel scales.

1. *Video of FedEO client and search for Landsat (Landsat_TM) data – show data browse from 1 Landsat scene*

- After identifying areas of deforestation with MODIS data, the scientist uses the same tool, to search for high-spatial-resolution Landsat data from the USGS. This helps to ensure a more accurate assessment of change in forest area. Since repeat coverage for Landsat data is only once every 16 days, this can make it more difficult to have high-quality cloud free scenes. On the other hand, the advantage of using Landsat data is that these data form a continuous 30+ year satellite record for global monitoring.

(5) Video of FedEO client accessing browse of SPOT data.

- The user can also access the better resolution of the SPOT imagery from CNES which can provide valuable insight in the forest cover evolution analysis. The repeat acquisitions and the high spatial resolution of images allows detection of subtle changes in surface cover, notably in the forestry domain.

1. *Video of FedEO client accessing browse of Envisat C-band data with Sentinel-1 data*

- The FedEO client enables a user the ability to can also analyze tropical forest coverage over time with access to both the ESA's Envisat C-band data and the European Union Sentinel-1 data products.

- Because the ENVISAT ASAR C-band data can "see" through clouds and smoke, these data provide valuable information concerning change detection occurring in forested areas when compared to optical imagery.

- The Sentinel-1A, a continuation of Envisat for SAR, plays an important role by continuing to fill observational gaps due to cloud cover.

(7) Video of CWIC-Smart client doing collection search, and then accessing browse of same MODIS product, Landsat products, SPOT, ENVI SAT, and same Sentinel product. Show as much as can be shown during the concluding remarks)

- Across international waters, an American colleague uses NASA's CWIC-Smart search tool to access the same data.
- The aggregate results for these Borneo deforestation studies can be given to policymakers to make informed decisions based upon satellite observations over time.
- Scientists can now access satellite data across multiple CEOS agencies using tools which have been developed in coordination through WGISS and by making use of a set of commonly defined interoperability standards.
- In these demonstrations, we show scientists accessing satellite data from NASA, USGS, CNES, ESA, and the European Commission Union missions using two tools.
- The ability to search, discover and access data from multiple CEOS agencies and perform inter-comparisons with the satellite data are valuable capabilities for scientists studying environmental issues worldwide.
- The use of the WGISS interoperability standards for search and access makes this possible. These tools enable advisors to use satellite data in combination with other information to study environmental issues to benefit future generations.